

BT 2011

Introduction to Biotechnology

3 credits

A multidisciplinary course combining applied microbiology with biochemical engineering. The course includes topics such as the microbiology of natural products, the conservation and use of microorganisms, and the basic principles involved in the operation of microbial processes on an industrial scale. It also includes the concepts of modern fermentation industries related to food, health and energy needs and production of antibiotics, vitamins, enzymes, and microbial polymers.

BT 3013

Introduction to Bioprocessing Engineering

3 credits

Prerequisite: BS 1102 Calculus II for Bioscience

The theory of mass-heat transfer and energy balance; methods and techniques of using these principles for the production of agricultural products. The principles of biosensors, bio-separations and bio-products.

BT 3014

Microbial Physiology

3 credits

Prerequisite: BS 2012 Genetics

Microorganisms: their physiology, morphology, fine structure, genetics and metabolism in relationship to bacterial growth and division.

BT 3015

Industrial Fermentation

3 credits

Prerequisite: BT 3014 Microbial Physiology

Culture, selection and the use of microorganisms for the production of industrial products, such as amino acids, enzymes, antibiotics and organic compounds. Emphasis is on: the metabolic regulation of the pathways that generate fermentation products, on yeast fermentations, and on genetic manipulation (including recombinant DNA techniques) of industrial microorganisms.

BT 3016

Enzyme Technology

3 credits

Prerequisite: BS 2010 Basic Biochemistry

The structure and function of enzymes, including enzyme kinetics, regulation and inhibition. Effect of pH and temperature. Inducible enzymes, extraction by means of mechanical, physical or chemical disruption of plant, animal or microbial cells. Purification and immobilization techniques. Use of whole microorganisms or isolated enzymes as catalysts.

BT 3017 Principles of Research 3 Credits

Introduction to research methodology. Experimental design, hypothesis generation, ethical principles. Use of spread sheet packages to perform statistical analysis.